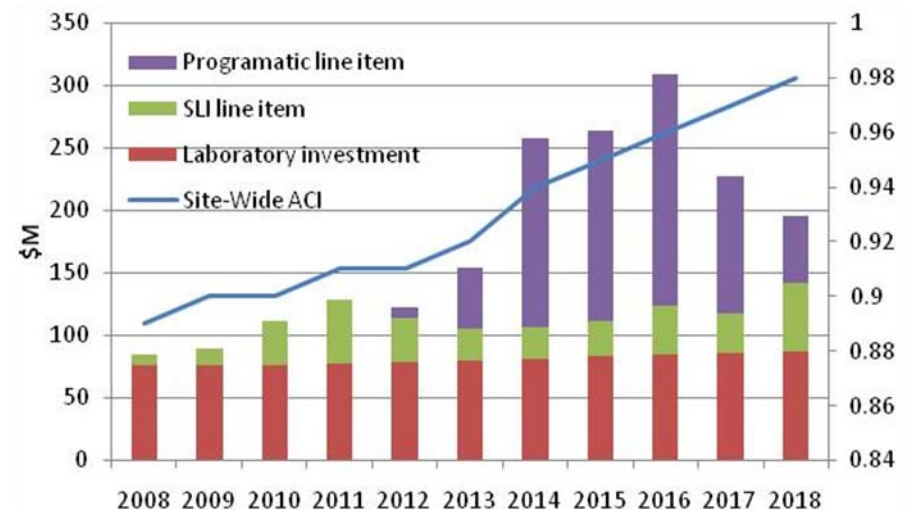




Office of Science Annual Lab Plans/TYSP, Mission Readiness and Infrastructure Modernization Initiative

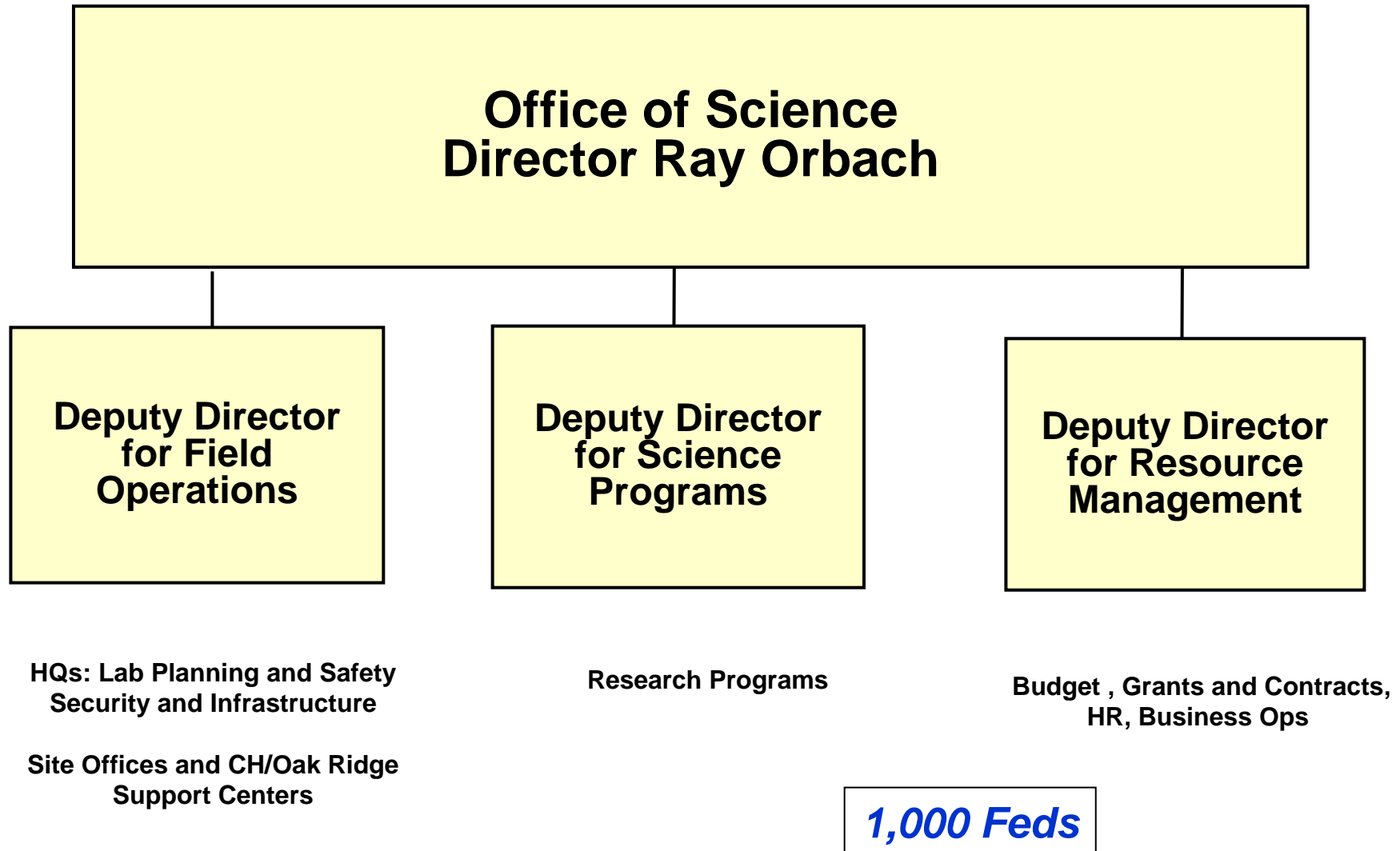
Becoming the stewardship benchmark

Office of Science
June 4, 2008





SC Organization

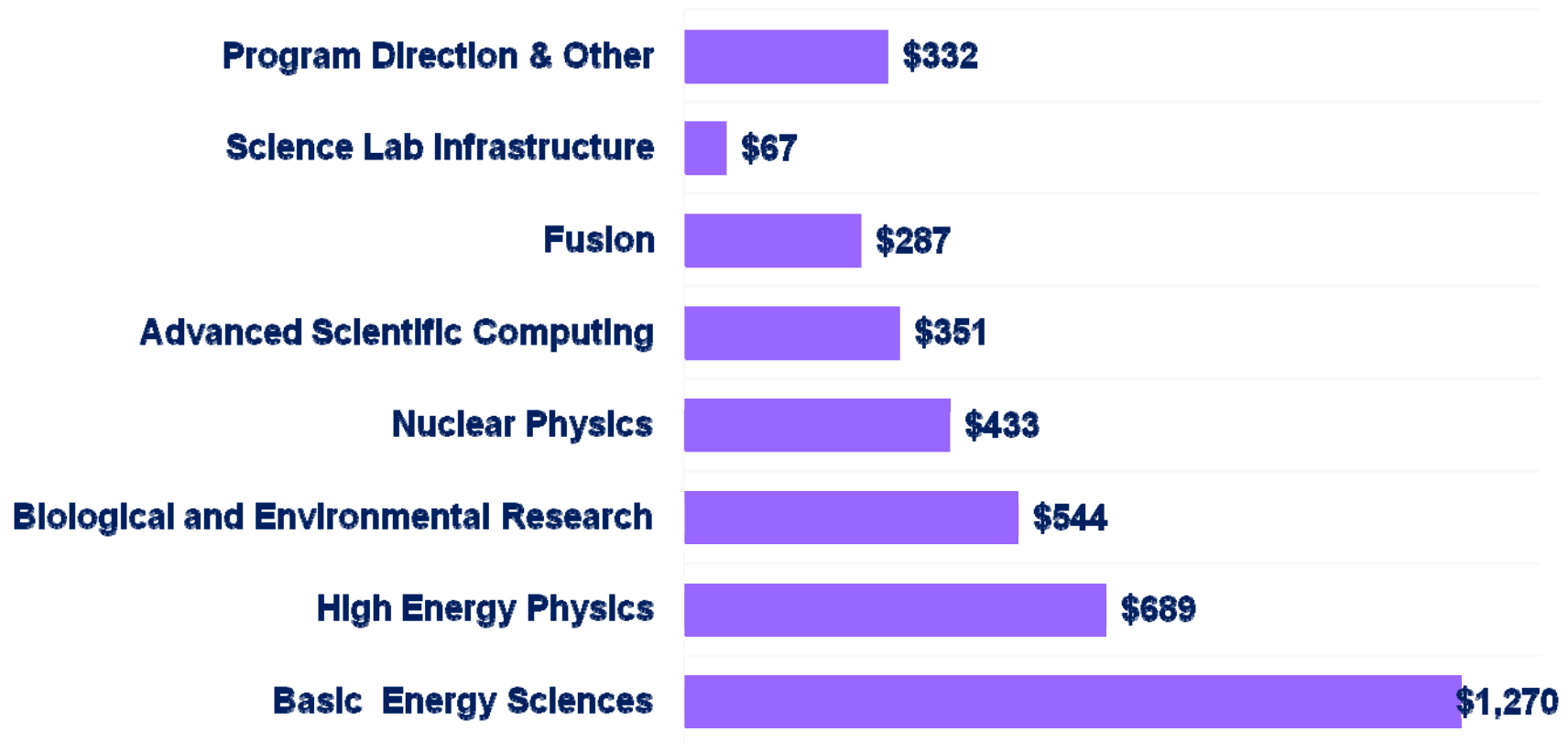




Office of Science Funding

(FY 2008 Millions)

Total Funding \$3.97 Billion



SC builds and operates some of the nation's most advanced R&D user facilities at its labs (~\$5B in RPV)



World-Leading Facilities

Driving transformational science and U.S. innovation

- **Spallation Neutron Source** (\$177.6M) and the **High Flux Isotope Reactor** (\$58.8M), together provide capabilities unavailable anywhere else in the world for study of the position and motion of atoms in materials – from liquid crystals to superconducting ceramics, from proteins to plastics, and from metals to cell walls.
- **Four Synchrotron Light Sources** – Extraordinary tools for determining protein structures, probing the physical properties of new materials, and studying chemical reactions
 - **Advanced Light Source** (\$51.1M)
 - **Advanced Photon Source** (\$116.5M)
 - **National Synchrotron Light Source** (\$40.1M)
 - **Stanford Synchrotron Radiation Laboratory** (\$33.0M)
- **Five DOE Nanoscale Science Research Centers** (\$101.2M) – providing unmatched capabilities for fabrication, synthesis, and characterization of matter at the nanoscale
- **Other**: RHIC, EMSL, CEBAF Upgrade, Leadership Computing Facilities, Bioenergy Centers

Next Generation Tools

- **Linac Coherent Light Source** (\$56.0M) – a revolutionary x-ray free electron laser that will allow probing of chemical and biological structures and examination of chemical reactions in real time at the single molecule level
- **National Synchrotron Light Source-II** (\$103.3M) – a state-of-the-art light source for x-ray imaging, capable of nanometer resolution of structures and features of individual atoms, molecules, and crystals



SC Infrastructure Overview

- SC has 10 major research labs
 - ANL, BNL, LBNL, ORNL, PNNL and SLAC
 - Ames, FERMI, TJ, PPPL
- \$8B RPV of supporting facilities
- 1,500 buildings, 20M sq.ft. of space



SC Annual Laboratory Planning

New Planning Process

- Provides a yearly opportunity for the senior leadership of SC and the laboratory to discuss and develop a common understanding of the future of each laboratory.
- Integrates scientific and infrastructure planning at each laboratory.
- Creates a bookend to the annual laboratory appraisal process.
- Satisfies multiple audiences efficiently.
- Results in an Annual Lab Plan (ALP) document



Highlights of the ALP guidance

- Sections for both public and internal use:
 - Keeping the lab business plans for public consumption.
 - Expanding the “future plans” section for internal discussion.
- A dramatically reduced Ten Year Site Plan (TYSP), specifically oriented to the scientific missions of the lab but that still meets RPAM/CFO requirements.
- A focus on Goals 1, 2, 3 (Mission Activities), and Goal 7 (Facilities and Infrastructure) of the PEMP, with the intention of covering all the Goals next year.



Annual Laboratory Plan Outline

- Mission/Overview *½ page*
- Lab-at-a-Glance *½ page*
- Laboratory Focus/Core Competencies *1 page*
- Business Lines/Distinguishing Characteristics *2 pages*
- Science Strategy for the Future/Major Activities* *10-12 pages*
- Financial Expectations and Workforce Trends* *1 page*
- Infrastructure/the Ten Year Site Plan *9 pages*
- Appendix A: Lab-at-a-Glance
- Appendix B: F&I by Business Line *(pages as needed)*
- Appendix C: IFI Xcut *(pages as needed)*

* Internal SC use only



Infrastructure Portion of ALP

- **7. Infrastructure** (9 pages)
 - *Overview of Site Facilities and Infrastructure* (1/2 page)
 - *Facilities and Infrastructure to Support Laboratory Missions* (3 pages)
 - *Strategic Site Investments* (3 pages)
 - *Trends and Metrics* (1 page)
 - *Sustainability* (1 page)
- **Appendix B: F&I by Business Line**
- **Appendix C: IFI Xcut**

This is New!





Schedule

- April 21st – ALP-TYSP Due in to SC Hqs
- April 28th – May 1st – Lab Directors meet with SC management
- May 15th – SC Hqs provides feedback to sites
- June 16th – SC submit TYSP portions of ALP to OECM
- June 30th – Final ALP-TYSPs submitted to SC Hqs
(SC only sections excluded)



Appendix B: F&I by Business Line to 2008 Annual Lab Plans/Ten Year Site Plans

Facilities and Infrastructure to Support Laboratory Business Lines			
Business Line	Facilities and Infrastructure	Summary Condition Evaluation	Planned Investments
List each individual business line, consistent with Section 4.0*.	List the existing facilities and infrastructure necessary to support this business line.	Briefly summarize the results of your condition evaluation for this set of facilities and infrastructure.	List the investments needed to ensure the lab can support this business line. Investments less than \$2M can be grouped together. Investments should include new facilities/infrastructure as well as investments needed in existing facilities and infrastructure. These investments should be consistent with those described in your I&I crosscut
* For the purposes of this table, one overarching or "general purpose" business line may be added that captures facilities and infrastructure that support the entire laboratory (e.g., site-wide utilities, roads, waste treatment facilities, etc.)			



Mission Readiness approach will tie Investments to SC Mission

Corporate attention to infrastructure stewardship has improved, but current metrics tend to instill a maintenance spending attitude

What we have been doing:

- Improvements in real property data quality
- Corporate and contractor commitment to facility stewardship:
 - Increase maintenance funding
 - Reduce the Deferred Maintenance Backlog

Indicator

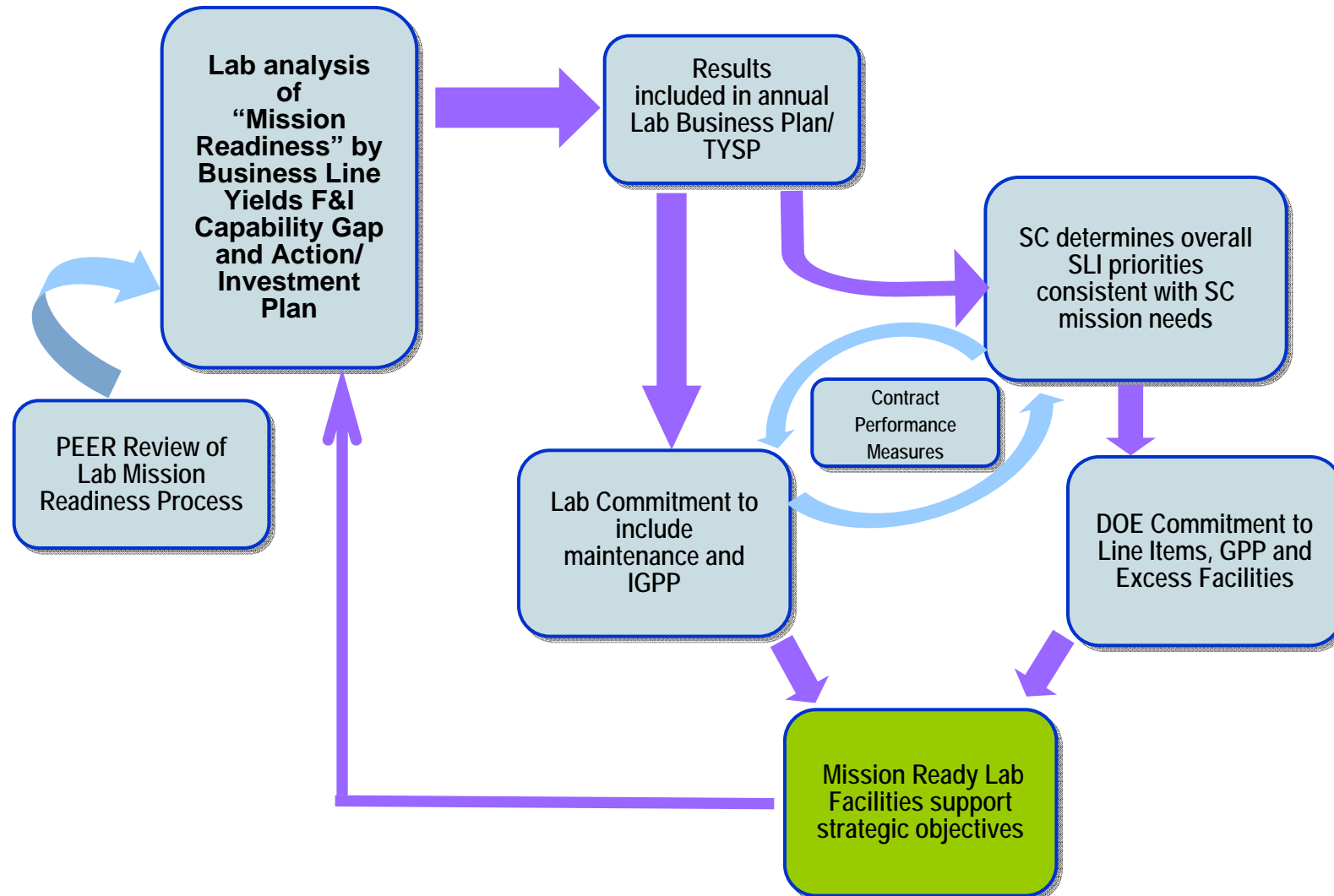
- FIMS data fields populated and successfully validated
- Performance metrics & lab leadership attention:
 - SC Maintenance Investment shift from ~1.4% to ~2.0%
 - Asset Condition Index improving

Mission Readiness Stewardship Model ties infrastructure investment directly to strategic mission objectives using laboratory Business Line Development



Mission Readiness Process

Driven by Science – executed through Budget and Contract Commitments





Business Line Perspective F&I Capability Gap and Action Plan

Office of Science

Business Line Technical F&I	Time Frame	Mission Ready (Assumes TYSP Implemented)				Key Buildings	Key Business Line Objectives	Facility and Infrastructure Capability Gap	Action plan	
		N	M	P	C				Lab	DOE
Neutron Scattering	Now									
	In 5 Yrs									
	In 10 Yrs									
Computational Science and Engineering	Now									
	In 5 Yrs									
	In 10 Yrs									
Materials Synthesis, Design, Characterization and Processing	Now									
	In 5 Yrs									
	In 10 Yrs									
Energy Technology	Now									
	In 5 Yrs									
	In 10 Yrs									
Biological and Environmental Sciences	Now									
	In 5 Yrs									
	In 10 Yrs									
Arms control and nonproliferation	Now									
	In 5 Yrs									
	In 10 Yrs									
Nuclear Physics	Now									
	In 5 Yrs									
	In 10 Yrs									

What problem must be addressed to ensure mission continuity? And, when?

- Not capable?
- Marginally capable?
- Partially capable?
- Capable?

- Lab Funded**
- IGPP
 - Non-Cap Alteration
 - Deferred Maintenance
 - Maintenance

- HQ Funded**
- Program Direct
 - SLI

Near term projects become performance items for upcoming execution year - e.g., FY 2009



Implementation of Mission Readiness

DOE-SC

- ✓ FY 2008 Integrated Lab planning guidance aligned with mission readiness concept
- Initiate SC Laboratory implementation of ‘mission readiness’ model
- Communications: OECM, OMB and Congress
- FY 2009 F&I Contract Performance Measures
- FY 2009 Planning Guidance based on feedback and lessons learned

SC Laboratories

- ✓ Develop Lab Plan that includes integration of Science and Infrastructure
- Initiate ‘mission readiness’ process
- Set schedule and implement peer review
- Develop lessons learned and implement improvements
- Continue to ensure that FIMS populated with key data

- Focus F&I metrics to match SC strategic goals



Summary of Mission Readiness

- “Mission Readiness”
 - Aligns infrastructure investments with SC missions
 - Provides a consistent and comprehensive ‘road map’
 - Can become a benchmark for F&I planning
- DOE-SC COO plans initial steps in FY 2008 with full implementation in FY09
- Positions DOE-SC with sound basis for strategic F&I needs
- MR designation currently not aligned with FIMS (business line vs asset)



Improving Mission Readiness: Infrastructure Modernization Initiative

The Infrastructure Modernization Initiative addresses the ability of our Laboratories to maintain their scientific leadership well into the future.

- Much of our infrastructure is old, expensive to maintain, and can no longer meet the requirements of a modern research facility.
- We have been addressing our deferred maintenance backlog; however, infrastructure can not continue to support world-class science through maintenance alone.
- We must use an integrated approach to improving mission readiness, including capital investment, maintenance, and elimination of excess facilities.



SC Infrastructure Modernization Initiative

- The Initiative will increase capital investment in general purpose infrastructure from ~\$84M in FY 2009 to ~\$200M in FY 2013.
- Increased investment will be used to –
 - Renovate space that does not meet research needs,
 - Replace facilities that are not cost effective to renovate or operate,
 - Modernize utility systems to prevent failures and ensure efficiency, and
 - Remove excess facilities to allow safe and efficient operations of each laboratory.
- As part of this initiative, GPP for general purpose activities at multi-program laboratories will no longer be funded with SC program funds. Laboratories will execute that work as Institutional General Plant Projects using overhead.
- As currently estimated, approximately \$247M of deferred maintenance will be eliminated, approximately 1.8 million square feet of modern building space will be added, 1.6 million square feet of obsolete building space will be eliminated, and 1.2 million square feet of space will be renovated at a total cost of ~\$2.1 billion.



Infrastructure Modernization Initiative projects in FY 08 and FY 09

Modernization of Laboratory Facilities, ORNL

TPC: \$91.3M - \$96.3M

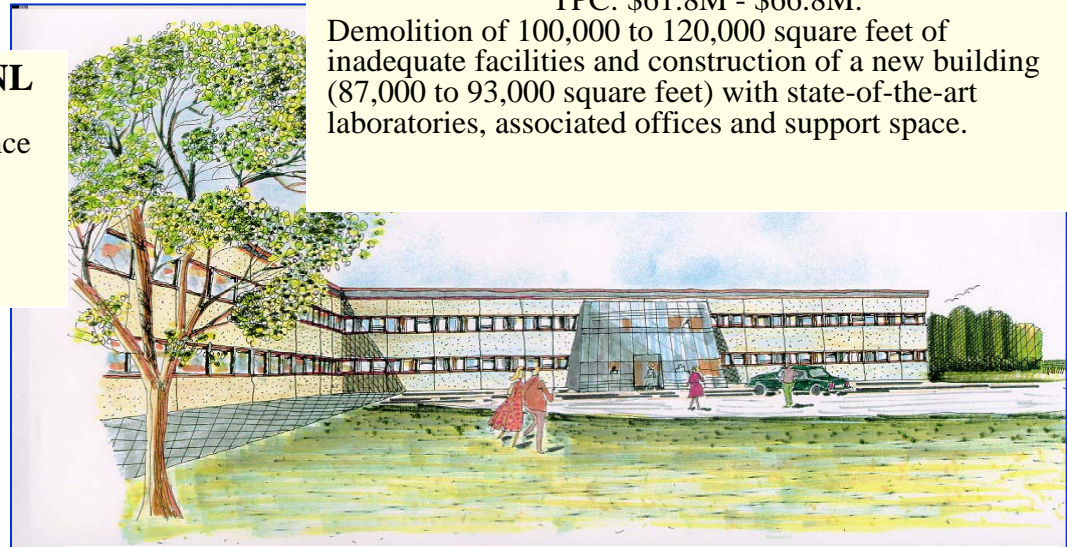
Construction of a new chemical sciences, materials science and technology core capabilities laboratory (140,000 to 170,000 square feet) that will allow researchers to move from the 4500 Complex.



Interdisciplinary Science Building, Ph I, BNL

TPC: \$61.8M - \$66.8M.

Demolition of 100,000 to 120,000 square feet of inadequate facilities and construction of a new building (87,000 to 93,000 square feet) with state-of-the-art laboratories, associated offices and support space.



Technology and Engineering Development Facility, TJNAF

TPC: \$67M - \$73.2M

Renovation of the Test Lab Building and construction of ~100,000 square feet of new space that will eliminate severe overcrowding and improve workflow and productivity. Also eliminates ~22,000 square feet of inadequate work space.



Tech Building Elevation



These four projects will support the science mission by improving the condition of our laboratories

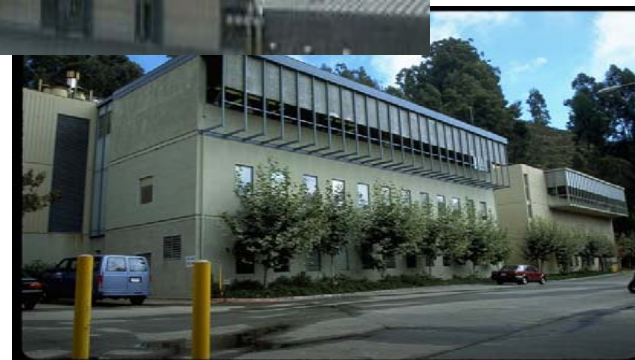
Seismic Life-Safety & Modernization of General Purpose Buildings Ph 2, LBNL

TPC: \$94.2M - \$98.3M

Replacement of seismically “very poor” and “poor” facilities with a new ~43,000 square feet laboratory/office building, upgrade of the Hazardous Waste Handling Facility, and modernization of another laboratory/office building (Bldg 74, Life Sciences).



**Building 85
(Hazardous Waste
Handling Facility)**



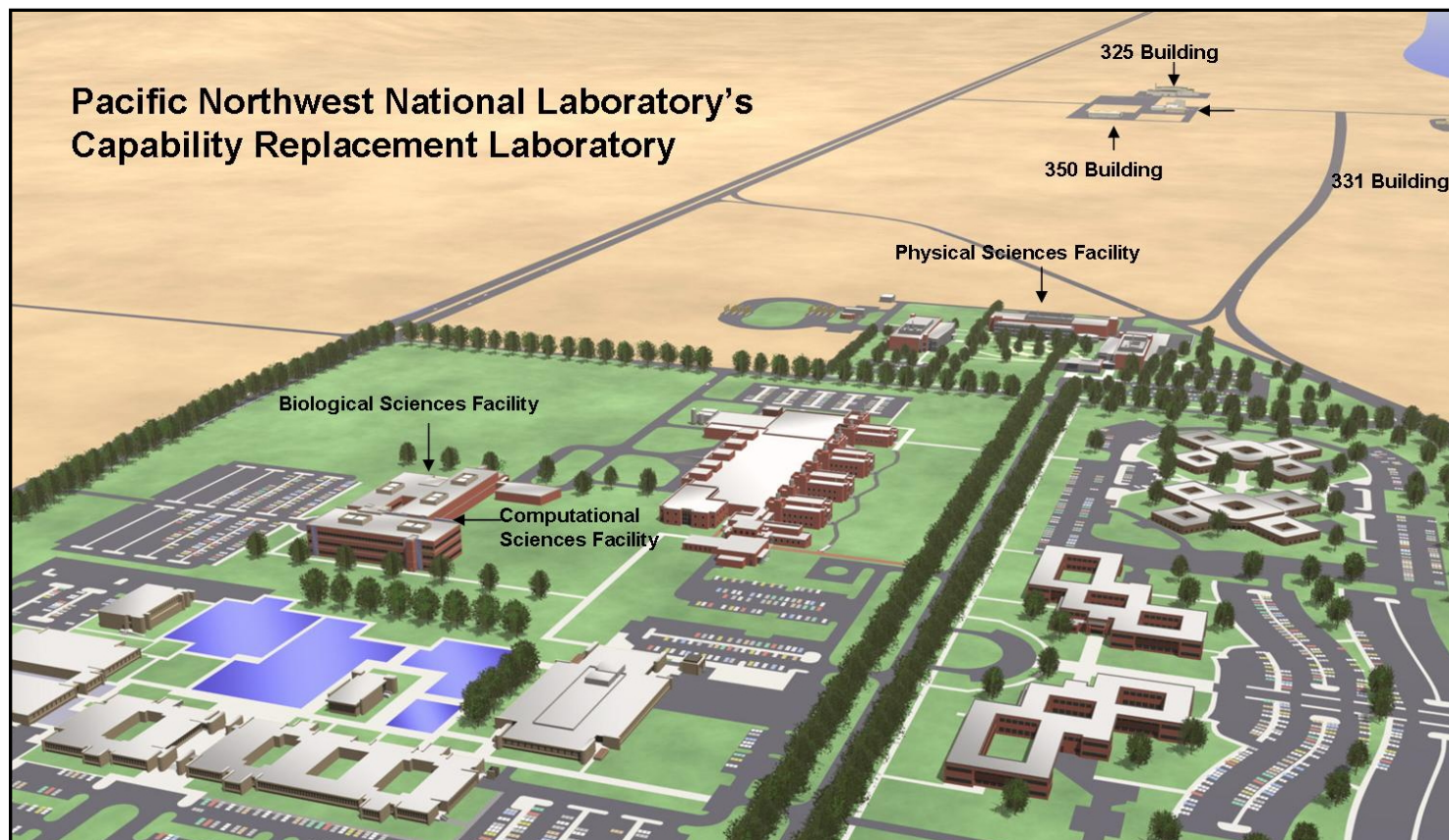
Project	Space Removed (square feet)	Deferred Maintenance Reduction		Asset Condition Index	
		(\$000)	% of Total DM	Before	After
Modernization of Laboratory Facilities at ORNL	0	31,500	17%	89.4%	91.4%
Seismic Life-Safety, Modernization, and Replacement of General Purpose Buildings, Phase II at LBNL	43,060	6,100	11%	93.2%	94.2%
Interdisciplinary Science Building, Phase I at BNL	100,000-120,000	2,278	2%	94.0%	94.2%
Technology and Engineering Development Facility at TJNAF	22,000	4,300	46%	94.4%	97.7%

Capability Replacement Laboratory (CRL) Project at PNNL

Replaces research facilities in 300 Area of the Hanford Reservation*

TPC \$224M

Co-funded by SC, NNSA & DHS





Bevatron D&D at LBNL



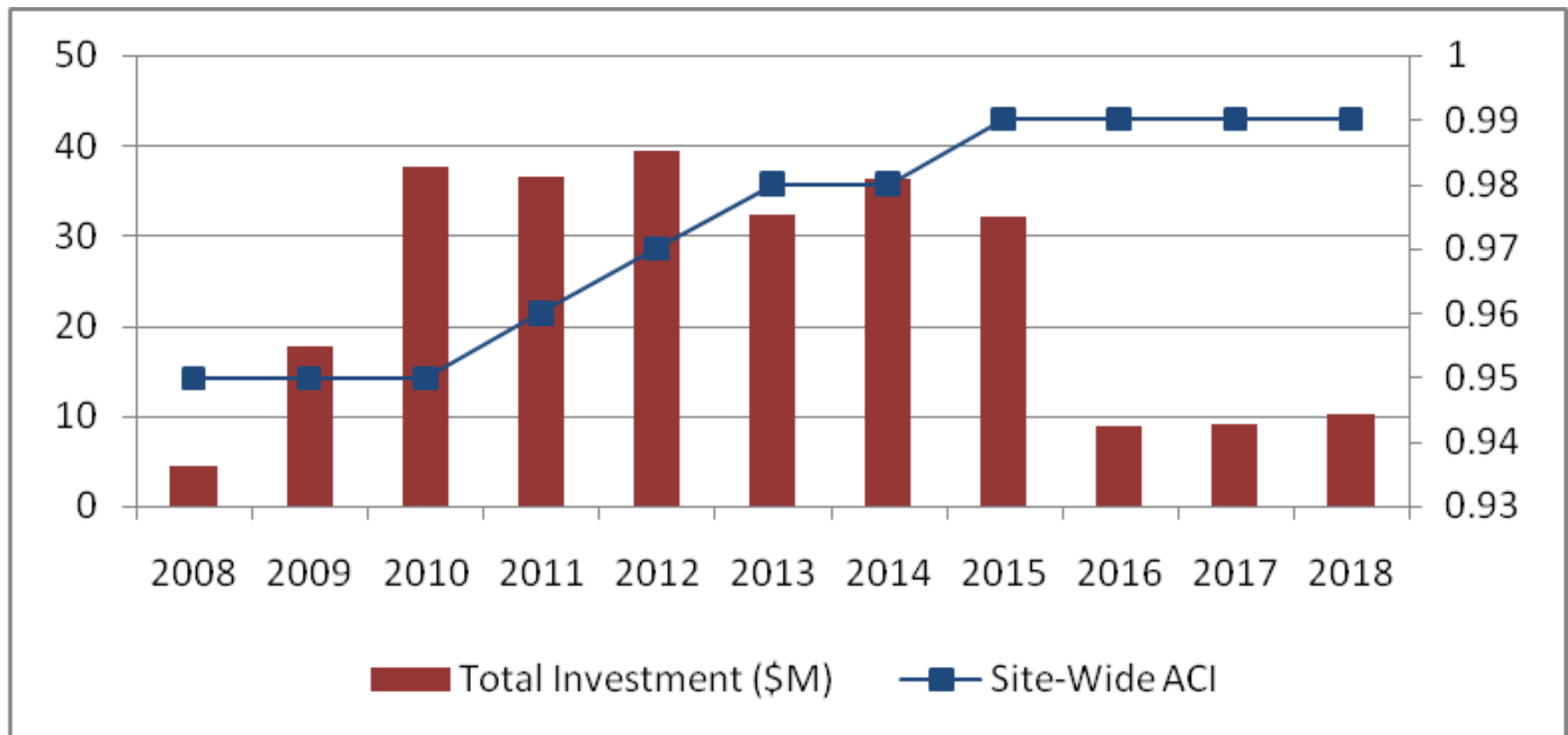
- The 51 complex occupies about 4.75 acres.
- Fire life safety code non-compliant.
- Seismic risk
- Made with materials now considered hazardous
- Major roof leaks

- Large, weak-focusing synchrotron accelerator
- Started operation in 1954, ended in 1993
- Approximately 180' diameter
- 11,000 tons of steel and metals
- 20,000 tons of concrete shielding blocks encircling the accelerator.
- Scope includes –
 - Demolition of the building.
 - Dismantling, characterization and removal of the shielding blocks.
 - Disposal of all materials.
 - Characterization of soil.
 - Backfill, compaction, and seeding.
- TEC: \$65M - \$75.3M
- Completion: 1Q FY 2012



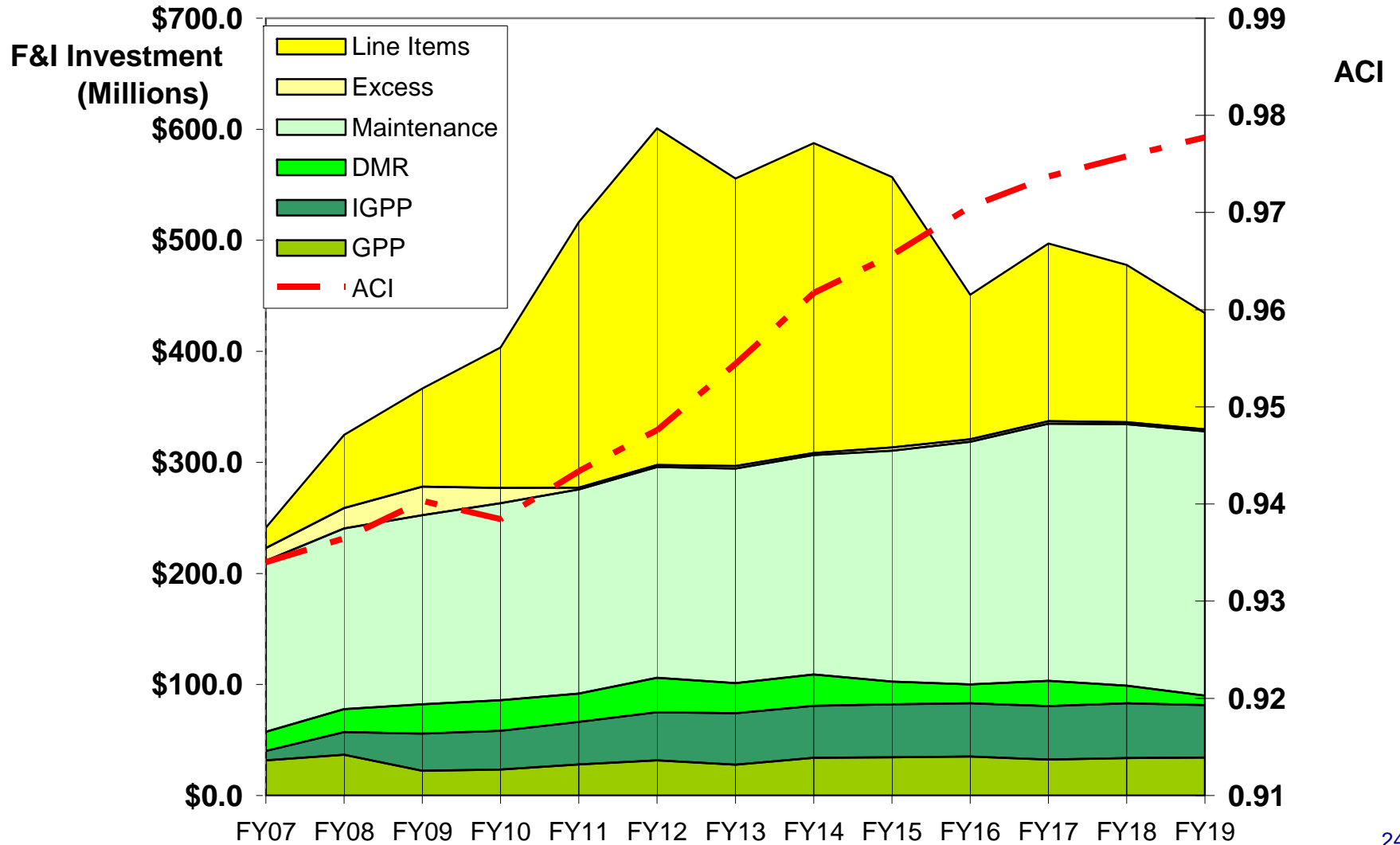
ACI vs. F&I Investment Plan

Required Chart in 2008 Lab Plans/Ten Year Site Plans

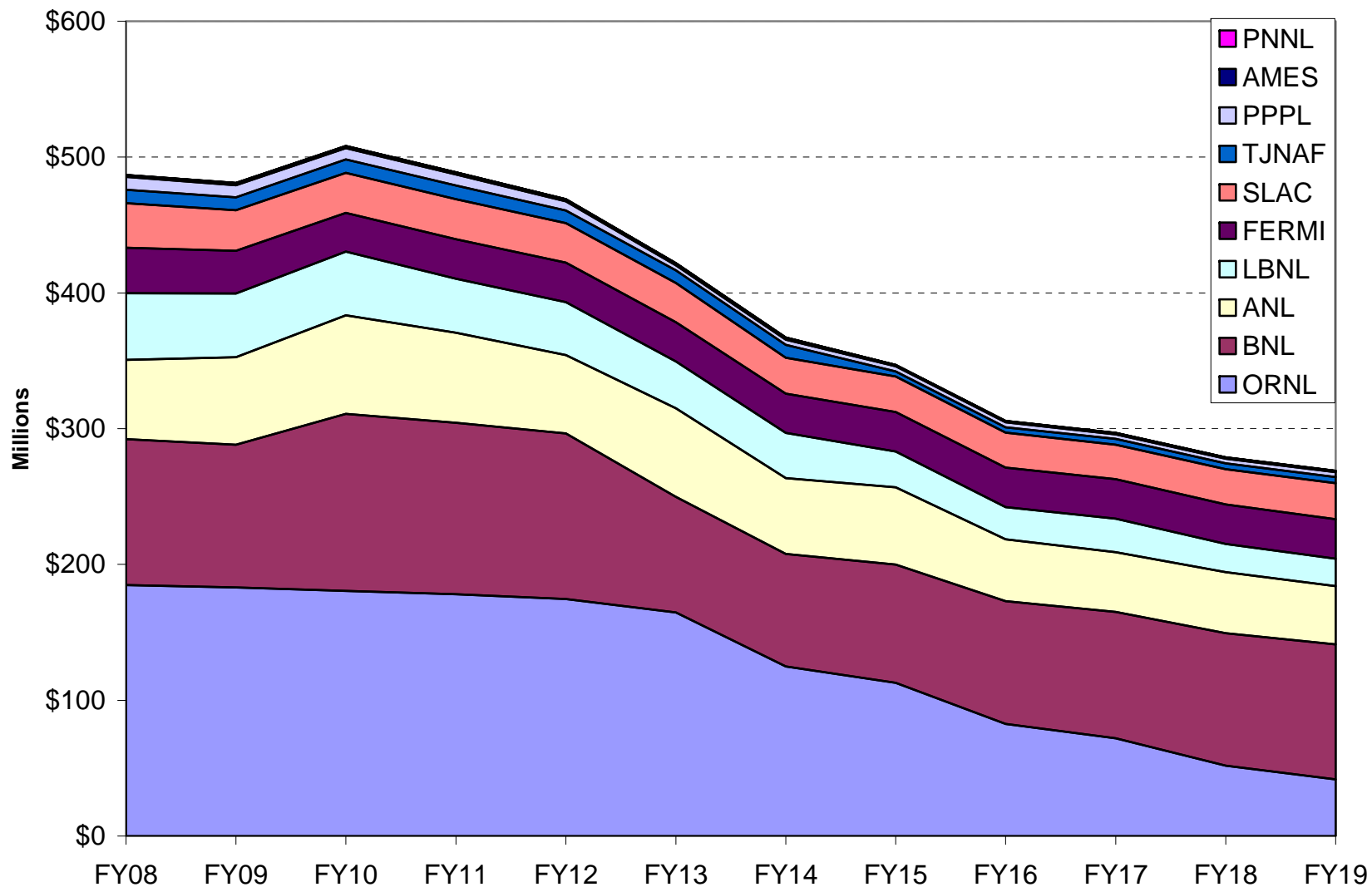




Projected SC F&I Investment vs ACI from FY 10 IFI Xcut Submissions



Projected DM from FY 10 IFI Xcut Submissions





Questions and Comments



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